

REMARKS**INTRODUCTION:**

In accordance with the foregoing, the claims have been retained in their present form. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-2, 4-5, 7-13, and 15-21 are pending and under consideration. Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §103:

In the Office Action, at pages 2-5, numbered paragraph 3, claims 1-2, 4-5, 7-13, and 15-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ishibe (USPN 6,489,982; hereafter, Ishibe) in view of McLaughlin et al. (USPN 4,758,071; hereafter, McLaughlin) and Narisawa (USPN 6,067,182; hereafter, Narisawa). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

It is respectfully submitted that Ishibe teaches a collimator lens 2 that is a general lens to forward light beams emitted from the light sources 1 to an optical system. The Examiner submitted that the collimator lens 2 shown in Table 1 of column 8 of Ishibe is identical to the collimating lens of the claimed invention. However, although Table 1 of Ishibe shows radiiuses of curvature of the first and second surfaces of the collimator lens 2 and diameters of the slits in the main scanning direction and the sub-scanning direction, Ishibe does not show exactly that the first and second surfaces of Ishibe correspond to the first and second surfaces of the claimed invention. That is, the first surface of the claimed invention is a surface of the lens facing the light source, and the second surface of the claimed invention is a surface of the lens facing the slit, whereas Ishibe does not disclose these arrangements. Therefore, it is respectfully submitted that the arrangement of the collimator lens with the other elements of the claimed invention is different from the arrangement of the collimator lens with the other elements of Ishibe.

On page 3 of the Office Action, the Examiner admits that Ishibe is silent regarding the collimator lens being made of one sheet of a spherical surface lens, the collimator lens being made of glass, and the first and second surfaces of the collimator lens having a first and a second positive constant refractive index, respectively.

Table I of Ishibe discloses the thickness and focal distance of the collimator lens, but does not disclose that the collimator lens is spherical, as is the case in the present claimed

invention. Because the collimator lens is generally non-spherical due to an asymmetric divergence angle of a laser diode, it appears that the lens of Ishibe is non-spherical.

Hence, independent claims 1, 5, 9, 13, and 17 of the present invention describe different arrangements of elements than are disclosed by Ishibe.

It should be noted that Mclaughlin requires that the glass used to form the glass plate with a high refractive index, which is then processed to form a spherical surface, must contain monovalent cations:

(Mclaughlin, col. 3, line 63 through col. 4, line 2):

An oxide glass plate 10 containing at least a kind of monovalent cations is used as a base material, which is dipped in a molten salt 11 at a temperature near the transition temperature of the glass as shown in FIG. 9A. The molten salt contains monovalent cations to increase the refractive index of the glass material, for example, at least a kind of cations selected from the group of Li ions, Cs ions, Tl ions and Ag ions. (emphasis added)

...

(Mclaughlin, col. 4, lines 29-29):

A glass plate subjected to the above-mentioned ion-exchange process must contain at least a kind of monovalent cations and have a high refractive index within the range of 1.50 to 1.77. (emphasis added)

In contrast, neither the present invention nor Ishibe requires that the glass contain at least a kind of monovalent cation. Hence, it is respectfully submitted that Mclaughlin teaches away from the present invention, and it would not be obvious to combine Ishibe and McLaughlin.

On page 4 of the Office Action, the Examiner notes that Ishibe also fails to teach the magnification ratio in a main scanning direction and a magnification in a sub-scanning direction are the same (claims 1, 5, 9, 13 and 17) and the collimator lens having a positive refractive power (claims 2, 7, 11, 15, and 19).

The Examiner submits: "It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Ishibe to have the image formation optical system has an image formation magnification along the main scanning direction equal to the image formation magnification along the sub-scanning direction as taught by Narisawa. The motivation for doing so would have been to minimize the defocus or dealignment of the light beam on the scanned surface as suggested by Narisawa" (emphasis added).

(Narisawa, col. 8, lines 27-33)

In the optical scanning device 20A of the embodiment as described above, while image formation magnification βT of the optical system along the main scanning direction is made small, image formation magnification βS of the optical system along the sub scanning direction is made large, whereby the image formation magnification βT is set to less than the image formation magnification βS . (emphasis added)

(Narisawa, col. 9, lines 15-23):

When the optical scanning device 20B comprising an underfilled optical system as shown in FIG. 2 executes interlaced scanning, the beam width required along the sub scanning direction in an interlaced scanning mode with a three-lines space becomes three times that in an adjacent scanning mode and the beam width required along the sub scanning direction in an interlaced scanning mode with a five-lines space becomes five times that in the adjacent scanning mode, as listed in the table of FIG. 12. (emphasis added)

(Narisawa, col. 9, lines 43-65):

In the optical scanning device 20C, the spacing between a light source 1 and a collimator lens 12 is made shorter than the focal length of the collimator lens 12, whereby the beam emitted from the collimator lens 12 becomes divergent light beam, and the divergent light beam is made collimated light beam only in the main scanning direction through the convex spherical lens 7. That is, the beam width along the main scanning direction is reduced by means of the convex spherical lens 7. (emphasis added)

At this time, the image formation magnification in the main scanning direction becomes the composite focal length of the collimator lens 12 and the convex spherical lens 7 in a pre-polygon optical system. Thus, the focal length becomes large and the image formation magnification βT becomes smaller as compared with a case where the convex spherical lens 7 is not placed. Since the image formation magnification βT is made small without changing the focal length of the collimator lens 12, a loss of the light quantity does not occur and an defocus or dealignment phenomenon on a scanned face caused by temperature change, vibration, etc., can be lessened.

Hence, the purpose of reducing the beam width along the main scanning direction in Narisawa is to obtain image formation magnification without defocus, wherein Narisawa inserts a convex spherical lens immediately in front of the rotating polygon mirror to reduce beam width.

In contrast, the present invention utilizes a slit which limits a size of a beam selection of beams passing through a collimating lens (see page 4, paragraph [0022] of the specification).

However, Narisawa also recites (col. 9, line 66 through col. 10, line 5):

The composite focal length of the pre-polygon optical system may be enlarged and the image formation magnification βT may be made small by placing a lens for enlarging the beam width along the main scanning direction in the pre-polygon optical system in place of the lens for reducing the beam width along the main scanning direction such as the convex spherical lens 7.

In this embodiment, Narisawa utilizes a lens after the beams have passed through both the collimator lens and the cylindrical lens and have been reflected.

Hence, Narisawa teaches a different arrangement of elements than the arrangement of the elements of the present invention and does not teach or suggest the use of a slit

arrangement of the present invention.

It is respectfully submitted that neither Ishibe nor McLaughlin nor Narisawa teaches or suggests the arrangement of the collimating lens as set forth in independent claims 1, 5, 9, 13 and 17 of the present invention.

Hence, it is respectfully submitted that even if combined, Ishibe, McLaughlin and Narisawa do not teach or suggest independent claims 1, 5, 9, 13 and/or 17 of the present invention.

Thus, independent claims 1, 5, 9, 13 and 17 are submitted to be patentable under 35 U.S.C. §103(a) over Ishibe (USPN 6,489,982) in view of McLaughlin et al. (USPN 4,758,071) and Narisawa (USPN 6,067,182). Since claims 2, 4, 7-8, 10-13, and 15-16, and 18-21 depend from independent claims 1, 5, 9, 13, and 17, respectively, claims 2, 4, 7-8, 10-13, and 15-16, and 18-21 are patentable under 35 U.S.C. §103(a) over Ishibe (USPN 6,489,982) in view of McLaughlin et al. (USPN 4,758,071) and Narisawa (USPN 6,067,182) for at least the reasons that amended independent claims 1, 5, 9, 13 and 17 are patentable under 35 U.S.C. §103(a) over Ishibe (USPN 6,489,982) in view of McLaughlin et al. (USPN 4,758,071) and Narisawa (USPN 6,067,182).

EXAMINER'S RESPONSE TO ARGUMENTS:

In the Office Action, at pages 5-7, the Examiner provides responses to Applicant's arguments filed on June 30, 2006.

The explanations above are believed to overcome the arguments of the Examiner.

CONCLUSION:

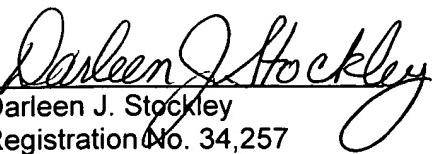
In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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